Rule WLM364: **Non-paging DASD connect time was a major cause of DASD delay**

Finding: CPExpert has determined that non-paging DASD connect time was a major cause of delay in DASD response for the I/O operations of the service class.

Impact: This finding may have a LOW IMPACT or MEDIUM IMPACT on the performance of the device. This finding applies only with OS/390 Release 3 and subsequent versions.

Logic flow: The following rule causes this rule to be invoked:
Rule WLM361: Non-paging DASD I/O activity caused significant delays

Discussion: Connect time is the time in which the device is actually connected to the path. This time includes the data transfer time, but also includes protocol exchange (or "hand shaking") between the various components at several stages of the I/O operation.

The data transfer time obviously is a function of the amount of data being transferred. This simply is the number of bytes transferred divided by the transfer speed (for example, if 4096 bytes were transferred from an IBM-3380 with a transfer speed of 3,000,000 bytes per second, the 4096 bytes would require 4096/3,000,000 seconds; or about 1.36 milliseconds).

Large connect times generally are caused by the following situations:

• A large average block size. This situation may be highly desirable for sequential data sets, but would be undesirable for randomly accessed data.

• Long multi-track searches. For example, the catalog must be searched for cataloged files, the Volume Table of Contents (VTOC) must searched to find a requested file, a directory must be searched for partitioned data sets, etc.. These searches will result in long connect times for the volume involved.

• Program loading from system packs.

CPExpert examines the non-paging DASD I/O connect time contained in SMF Type 72 records (field R723CICT). CPExpert produces Rule WLM364 if the average connect time accounted for a significant percent of

the I/O time for transactions in the service class missing its performance goal.

If the service class missing its performance goal is a transaction service class (for example, composed of CICS 4.1 transactions), CPExpert will identify the server service class (for example, the CICS region). CPExpert will then analyze the DASD I/O times for the server.

The following example illustrates the output from Rule WLM364:

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RULE WLM364: NON-PAGING DASD CONNECT TIME WAS A MAJOR CAUSE OF DELAYS

  DB2HIGH: A major part of the delay to the service class was due to
  non-paging DASD device connect (CONN) time.  Connect time is caused
  primarily by data transfer.  Please refer to the WLM Component User
  Manual for advice on how to minimize device connect time.
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Suggestion: As mentioned above, large connect times may be acceptable, depending upon the nature of the application files and why the large connect times occur.

CPExpert suggests that you review the files accessed by the service class missing its performance goal. Based on this review, you can decide whether the large connect times are appropriate or whether action should be take with respect to the application files.

- If the large connect times are appropriate, you may wish to review the performance goal specified for the service class. Depending upon how much connect time was responsible for the I/O delay (and how much the I/O delay accounted for the service class missing its performance goal), you may wish to adjust the performance goal. This, of course, is the easiest solution: you simply adjust the performance goal considering the data transfer requirements of the applications.

- If the large connect times are not appropriate (or if you cannot adjust the performance goal because of management decisions), you may be required to address the application and its files. This step may require considerable effort, depending upon the application, and normally will not be taken lightly.